Enhancing Farmers Market Food Safety Practices for Fresh Produce Handling

**Issue:** Consumer support for the local food movement and farmers markets (FM) has grown exponentially since 2006. FM vendors and managers need to ensure that appropriate good handling practices and best management practices are followed so their product is safe for human consumption. However, the resource base for FM food safety is fragmented, generalized, and difficult to navigate. Additionally, novel approaches are needed to engage consumers in market food safety. The overall goal of this project is to equip vendors, market managers, and consumers with both scientifically-based and practical behaviors that will reduce the likelihood of a foodborne outbreak.

**Action:** Based on preliminary data and surveys of market managers, consumers, and vendors, we are currently developing a market manager food safety kit called “Wholesome & Healthy at the Farmers’ Market” that includes educational materials for consumers and tools for managers to promote food safety. The overall goal is to engage consumers in FM food safety and raise awareness of potential food safety issues. We will be beta testing this kit at FMs in Northwest Arkansas in Spring 2016.

**Impact:** In the USA, local food markets account for a growing share of agriculture production and with this growth come unique food safety challenges. Even though consumers often perceive local foods as safer and more wholesome, there is no evidence that local food products would be less prone to contamination with foodborne pathogens, especially since local foods generally receive less government oversight both at the federal and local levels. If left unaddressed, the role of local food commodities as vehicles of foodborne pathogens may become more significant. Therefore, food safety training and education that is specific to personnel (i.e. market managers, vendors, farm-to-school buyers) in direct-marketing venues is integral for the protection of public health, specifically consumers of local food commodities.

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**Funding Source:**
USDA National Institute of Food and Agriculture
Revitalizing Strawberry Production in Arkansas and the Surrounding Region via Extended Season Production Systems: Phase II

**Issue:** Today, 89% of the strawberries grown in the U.S. come from California and 9% from Florida. The two states combined keep strawberries available in the grocery stores for most of the year; however, 15% of our annual crop is imported from Mexico and demand is expected to increase 7% a year for the next three years. In contrast, Arkansas production accounts for only a small fraction of the current national acreage. Ninety percent of the strawberries grown in Arkansas are sold in local markets. The rapid increase in the number of Farmers’ Markets in Arkansas and the region combined with increasing demand by consumers for local produce has created lucrative opportunities for growers of this highly sought after berry. Recent advances in plastic mulch and protected culture technologies may allow Arkansas growers to extend the strawberry season; however, there may be unique food safety risks associated with the various strawberry production systems.

**Action:** On farm visits and interviews were completed for seven regional strawberry farmers. Overall, we identified three low tunnel producers, four high tunnel producers, and five traditional field plasticulture producers; however, four of the farmers have two different systems giving us a total of seven farmers. During these visits, each grower provided a farm tour and discussed their general growing practices as well as their food safety practices and concerns, if any.

**Impact:** Overall, the growers think food safety is important. However, four expressed frustration that so much of the responsibility of food safety is put on the grower. With that said, the biggest food safety concerns are wildlife and ensuring a clean water supply. The anticipated impacts of this work include 1) development of food safety checklists specific to strawberry production systems and acknowledgement of the inherent food safety concerns related to each system; and 2) compilation of an internal report for extension agents to use so they may understand the food safety perception of strawberry producers.

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**Funding Source:**  
National Sustainable Strawberry Initiative
Role of environmental and human microbiota in norovirus survival, transmission, and infectivity

**Issue:** Consumption of fresh produce in the U.S. has steadily increased from 119 to 141 lbs per capita in 1990 and 2014, respectively. The commodities with the highest increase in per capita consumption were leafy lettuces and spinach. This is of particular importance since foodborne disease outbreaks (FBDO) linked to the consumption of leafy greens and salad mixes contaminated with human pathogens have seemingly increased in recent years. Human noroviruses (HuNoV) are the primary etiologic agents identified, causing 55% of reported FBDOs linked to leafy greens from 1973 to 2012.

**Action:** The overall aim of this research is to allow for a better understanding of the fundamental importance of commensal microbiota—in a given environment—on HuNoV survival and transmission. We hypothesize that HuNoV interacts with the microbiome present in leafy green production systems through adsorption to the extracellular polymeric substances (EPS), lipopolysaccharide (LPS), and/or peptidoglycan (PG) of bacteria as a whole cell or as individual components thus aiding in the persistence and transmission of HuNoV.

**Impact:** This research project will lead to a better understanding of the fundamental importance of commensal microbiota in viral survival and transmission. In general, it is presumed that viral particles associated with environmental materials are physically more stable than freely moving viral particles. Moreover, the results from this project have the potential for use in the development of new anti-viral strategies and prevention and control measures. The fact that HuNoV is the primary cause of acute gastroenteritis in the U.S. and worldwide indicates that any advancement in understanding HuNoV ecology will greatly public health as a whole.

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**Funding Source:**
Arkansas Biosciences Institute